## 7. On the General Results of a Zoological Expedition to Madagascar in 1894–96. By C. I. Forsyth Major.[1]

[Received December 1, 1896.]

I arrived at Mananjary, on the east coast of Madagascar, at the end of August 1894, and embarked at the same place almost two years later, on July 11th, 1896. My original intention had been to hurry on at once, by the most direct route, to Sirabé, situated on the central plateau, at about 12 days' journey to the N.W., in order to profit of what remained of the dry season for the intended excavations in the marshes. The impossibility of finding bearers for the little-known and difficult direct route obliged me, however, to travel first to Fianarantsoa, the capital of the Betsileo, situated in a S.S.W. direction, at 7 days' distant from Mananjary. At Fianarantsoa I had to wait 22 days for the bulk of my luggage, which, according to previous arrangements, ought to have arrived before myself. I employed the time in doing such collecting work as the circumstances would allow. In the meantime, the news arrived of sudden complications in the political situation, and all the Frenchmen residing in the interior left for the coast, with the exception of my young assistant, whom, a little too late in the day, I tried to give out as a British subject.

As there was still some hope left that the Hovas would yield to the French ultimatum, I decided to leave for what I thought would prove a quiet corner in the forest of the Tanala, N.E. of Fianarantsoa, and there to await the events, and eventually the end of the war, which it was supposed would be of very short duration. My subsequent difficulties with the Tanala Governor were of a somewhat more serious nature than I wished to describe in my letters; I have to mention it here, as it considerably interfered with my work. The collecting work in the forest extended from October 1894 to the beginning of February 1895, interrupted in December by a journey to the Betsileo town of Ambositra, in order to communicate with the few Englishmen residing there, and by their help with the British Vice-Consul in Antananarivo.

The first six weeks of my stay in this district we were encamped in the midst of the forest, near Ivohimanitra, at from 1000 to 1100 metres above the sea. The second stay was at Ambohimitombo, a short day's journey N.W. from the latter place and some 400 metres higher up. As I then supposed that later on I would have no more opportunity to visit the forest-region, I determined to collect everything that would come in my way. From this system I had completely to depart in the sequel. Being much dependent on the cooperation of the natives, I soon found out that it was very difficult to train them for a manifold collecting work. Besides, I had after a while to convince myself that I was only able to do fruitful work in what I was best acquainted with. In my subsequent stays in the forest therefore, without leaving

[1] Communicated by the President.

behind what of supposed interest came into my way, I chiefly limited myself to the collecting of Mammals, which, with a little training of the natives, came in, later on, in such abundance, that we often found it impossible to master all the work. This is also the reason why I shall refer this evening, so far as the recent fauna is concerned, almost exclusively to Mammals, leaving to my friends to make such additions as they may think proper when all the material has been distributed.

My first collection from Ivohimanitra was to be conveyed to Ambohimanga, the capital of this part of the Tanala country, and from there to be sent to the coast, in accordance with previous arrangements with the Norwegian Missionary stationed at Ambohimanga. We ourselves had to escort our things to the latter place, but after all, owing to the breaking out of the war, no goods could be sent from there to the coast; so that I was obliged to carry back, farther in the interior, what I could, leaving part of the things, for want of bearers, at the Mission Station.

The Betsileo town of Ambositra, on the central plateau, proved subsequently to be a favourable central place for the forwarding of my collections, and thither I resorted from the forest, and in the sequel more than once from Sirabé, having generally myself to accompany the caravans. The final packing of the collections was mostly effected at Ambositra, and had always to be done with the greatest care; I have no reason to complain of the great amount of time employed in packing. In the intervals of these occupations some good collecting work was carried on at Ambositra as well. Finally, in March, I left Ambositra for Sirabé, to learn only then, from the Rev. Mr. Rosaas, the discoverer of the fossil bones at Sirabé, who had himself been collecting in the marshes for over 20 years, that it would be impossible to excavate in the marshes for the next following months, on account of the great quantity of water. This proved to be true, so I had to content myself for the beginning with the exploration of a small cave, and to set to work again at collecting the recent fauna of the neighbourhood, with satisfactory results in both directions. The cavern yielded some bird-remains and egg-shells of *Æpyornis*, but chiefly small mammals. This exploration I have come to consider an interesting complement to the subsequent excavations in the marshes; although, as was to be expected, I subsequently found still existing in different parts of the forest most of the new Mammals discovered in the cave.

Different attempts to begin a systematic exploration of the marshes had always to be abandoned again, partly on account of the season and partly on account of the unfriendly behaviour of the population. Finally, losing patience, I left Sirabé, crossed over the whole central plateau to the east, and settled in the forest at Ampitambé, on the border of the Betsimisaraka country, in the hopes to hear soon of the arrival in Antananarivo of the French column and of the end of the war. It happened otherwise, however. My collecting work at Ampitambé proved

very successful, thanks chiefly to the cooperation of the natives, Betsileos and Betsimisarakas; but the French never came. The result was, that in the beginning of September 1895, after having despatched my collections *via* Ambositra, I returned to Sirabé and searched earnestly for the *Æpyornis*—at the best time, with regard to the condition of the marshes; at the worst, with regard to that of the country generally. Three times I was compelled to interrupt the work, once for a whole week. To make up for lost time, I engaged in the intervals as many workmen as presented themselves, generally more than fifty. When at last the rainy season stopped the business, I found that after all the result was more than I had expected; my collections were far superior to what any previous collector had brought together in many years. I have to acknowledge with thanks the Rev. Mr. Rosaas's friendly help at this place, especially in using his influence with the natives on our behalf.

The rest of the Odysey can be told in a few words. First a forced stay of nearly two months in the capital; a short sojourn of some weeks in the forest of Ankeramadinika, at a day's journey to the east, where not much was to be done, owing chiefly to the growing unfriendliness of the Hovas towards all Europeans. Still some good things, including a new Lemur, were secured here. Later on, I travelled south again, settled in the old place Ampitambé, with equally good results as the first time; the work, however, was unfortunately interrupted by the unsafety of the place. Lastly, a lengthened sojourn was made in a more southern region, viz. near Vinanitelo, in the forest of the independent Tanalas, 30 miles south of Fianarantsoa. Here some attempts to make excavations were without result; but good work was done in collecting recent mammals, as the following statement may show:—at the end of my first stay at Ampitambé 804 specimens of recent Mammals had been collected; when I left Vinanitelo this figure had been more than doubled.

Some general remarks on the results of my excavations at Sirabé may not be out of place here. The mammalian remains found were few, and on this account the locality cannot be said to be a very favourable one; besides there were difficulties of various kinds connected with the excavations and more or less inherent to the locality. The predominant feature of the fossil fauna of Sirabé in general is the great rarity of strictly terrestrial vertebrates. Apart from the *Hippopotamus*, which is numerous in the superficial deposit as well as lower down, the only mammalian remains found are a lower jaw of a *Centetes*, scanty remains of Rodents (which, to judge from a pelvis, belong to a Murine of considerable dimensions), some bones referable to *Potamochœrus*, and finally the remains of two species of a remarkable new family of Monkeys, chiefly represented by an incomplete skull, part of a lower jaw, milk-dentition, humerus, &c., some of which I have preliminarily described in the October number of the 'Geological Magazine' under the name of *Nesopithecus*. It will be more fully

described and its relationships discussed in a paper under preparation.

The *Avian* collections are there to prove that if the Mammals for which I was anxiously looking out did not come in in greater numbers, it was not for want of careful investigation. The collection of Birds' remains was partly damaged, partly destroyed by the falling in of the ceiling of my house at Sirabé, in which they were placed for drying. Fortunately there remains enough. The *Æpyornis* bones, some thousand in number, form the great bulk of the collection; the family is here represented by two species of *Æpyornis* and one of *Mullerornis*. One smaller species is predominant, and of this we shall be able before long to put together an almost complete skeleton, as the smaller and rarer parts, such as sternum, coraco-scapula, cerebral vertebræ, phalanges, &c., are all at hand. Six more or less complete skulls of the smaller species of *Æpyornis* were obtained.

The *Carinatæ* are represented by several hundred bones, belonging chiefly to aquatic birds. Mr. Andrews will be so good as to give some further particulars about the birds' remains. Of the rest the collection will speak for itself.

Of recent Birds I collected chiefly skeletons; and I hope to have done a useful work in bringing home over 160 birds' skeletons.

Of recent Mammals many hundred specimens have been obtained; of numerous species whole series, including skins, skeletons, and spirit-specimens.

### Lemuridæ.

Of Lemuridæ examples of 13 species have been collected, amongst which two (*Lepidolemur microdon* and *Chirogale melanotis*), preserved in the National Museum, were known only by a single specimen each. Amongst the number is one new species, a *Chirogale*, and besides this some remarkable varieties of others.

There is a curious character in the skull of Malagasy Lemurs, to which attention was first drawn in 1835 by a Swiss anatomist, Hagenbach, who observed it in a species of the genus *Lemur*; the same was later (in 1845) more fully described by Hyrtl in two species of the same genus: the tympanic ring is completely enclosed by the bulla ossea, but without osseous connection with the same. Winge has stated that this peculiarity holds good with regard to all the Malagasy Lemuridæ which have come under his observation, including *Chiromys*, and he therefore places them in a separate family. It is in fact of general occurrence amongst the Lemuridæ of the island; and having found other peculiarities in their skull besides, I have come to range myself with Winge's opinion, so that we have to consider *Chirogale*, *Opolemur*, and *Microcebus* as being more nearly related to the rest of the Malagasy Lemurs than to the African genus *Galago*.

### Carnivora.

Examples of 5 species were collected, which for the present call for no special remarks. The *Cryptoprocta ferox* is amongst them.

### Insectivora.

Of Malagasy Insectivora 14 species were known when I left Europe, viz. 13 *Centetidæ* and 1 *Crocidura*, not taking in account one *Crocidura* apparently introduced from India. All of these, with the exception of three (*Echinops*, *Geogale*, and *Microgale crassipes*), are represented in my collections. Of one species, viz. *Oryzoryctes tetradactylus*, which before was known only by one immature specimen in Paris, and one skin without the skull in London, I have brought back upwards of 150 specimens of all ages. Of another rare form, *Microgale dobsoni*, known only by an imperfect young specimen in the National Museum, there are also numerous specimens. Besides I have come upon 9 new species, all of them Centetidæ, bringing the number of this Malagasy family up to 23, the number of insectivorous species brought home by myself being 20, viz.:—1 *Crocidura*, 1 *Centetes*, 2 *Ericulus*, 2 *Hemicentetes*, 1 *Limnogale*, 4 *Oryzoryctes*, 9 *Microgale*.

I have elsewhere[1] published short descriptions of most of the new species, but have not yet begun the proper working-out of this rich material; I therefore limit myself to a very few general remarks.

The Tanrec, *Centetes ecaudatus*, which is often considered to be the type of the family Centetidæ, is certainly in several respects the least typical of them all, being very much specialized in various directions.

One remarkable form, modified for aquatic life, for which I have proposed the new genus *Limnogale* (*L. mergulus*), deserves special mention. It is almost of the size of *Mus rattus*, furnished with webbed toes, a powerful laterally compressed tail, short, broad, and flattened head, large infraorbital foramen, &c. The clavicles are present, whilst in the African *Potamogale* they are wanting.

Amongst the smaller species with soft hair, we meet with all gradations from forms highly fossorial (*Oryzoryctes*) to others in which the fossorial adaptation is reduced to a minimum, or may be altogether wanting (genus *Microgale*). Some of these last represent apparently the primitive stock of the family. It is from forms not dissimilar to these that a group of highly specialized African Insectivora may have taken their origin, whilst *Centetes*, itself a specialized creature, with a brain atrophied before being quite adult, cannot possibly have become the progenitor of fresh offshoots.

### Chiroptera.

For want of time the Bats have been only very superficially examined. My last collections having arrived only a short time ago, a certain number of specimens are still enclosed in the tin boxes.

There seem to be about 12 species represented, of which one is certainly new for Madagascar; only one *Vespertilio* being known, whilst my collections contain specimens of two species of the genus.

[1] See Ann. & Mag. Nat. Hist., Oct. and Dec. 1896.

### Potamochœrus.

The Wild Hog of Madagascar, of which the National Museum contains the skin of a young specimen, figures in my collections with 11 specimens, male and female, adult and young, and complete skeletons. The species has been named, but never described, and will have to be compared with the *P. africanus*, with which it presents more affinity than with *P. penicillatus*. To judge from the characters of the dentition, the same type is represented in the Siwaliks (*S. hysudricus*) as well as in the Upper Miocene and Pliocene of Europe, Eppelsheim, Montebamboli, Casteani, &c. (*S. palæochœrus* and *S. chœroides*).

### Hippopotamus.

Filhol is of opinion that there are three subfossil *Hippopotami* in Madagascar. There are certainly two on the west coast, to judge from the remains in the National Museum. My material comes from Sirabé, and the species may be different from those on the west coast. For the present, the question of one species more or less is a secondary one to me. All the Hippopotamus remains from Madagascar, those in the British Museum as well as those collected by myself and those preserved in Christiania and Paris, are certainly nearly related to each other, and this relationship may be briefly summed up as follows:—In size they are intermediate between *H. liberiensis* and *H. palæindicus*; in more important characters they would have to be placed, according to their greater or lesser degree of specialization, between *H. sivalensis* and *H. palæindicus* on one side, and *H. amphibius* on the other; one end of the whole line being occupied by the most generalized form, *H. liberiensis*, existing in W. Africa, and the other by the most specialized one, *H. major* of the Upper Pliocene of Europe. The whole series would be as follows:—

*H. liberiensis.*
*H. iravadicus.*
*H. sivalensis.*
*H. palæindicus.*
*H. madagascariensis*, *H. merlei*, &c.
*H. amphibius.*
*H. major.*

I have called the *H. liberiensis* the most generalized form; this does not hold good certainly as to the number of its incisors, in which respect it is very much specialized. The particulars of the cranium have almost the value of family characters, as by them it approaches the extinct genus *Merycopotamus* and the Suidæ, and appears to be, as was pointed out by Gratiolet, less aquatic and especially less exclusively herbivorous than *H. amphibius*. Compared with the other members, and especially with *H. amphibius* and *H. major*, one of the most striking differences lies in the relative proportion of the cranial and facial portion of the skull, the first being greatly

developed in *H. liberiensis*, whilst in *H. amphibius* and the *H. major* of the Upper Pliocene the cranial portion is much reduced, the facial portion on the contrary enormously produced. In connection with this is the great elongation of the frontal bones of *H. liberiensis*, whilst they are broad and short in *H. amphibius* and *H. major*. *H. sivalensis* is still very near *H. liberiensis* in this respect, the antero-posterior extension of the frontal being, as was shown by Falconer and Cautley, twice as great as in *H. amphibius*. An expression of the relative proportion between the anterior and posterior portions of the cranium is given by the position of the orbits. The various Hippopotamus crania from Madagascar have, in this respect, much resemblance with *H. sivalensis*, the cranial portion being, however, somewhat more shortened, the facial portion somewhat more lengthened; so that the orbit occupies a less central position than in *H. liberiensis*, and, as a matter of course, still less so than in *H. sivalensis*. The Malagasy forms thus constitute a step farther in the direction of *H. amphibius*, the breadth of the intraorbital region being much less than in the African species and the same as in *H. sivalensis*.

These changes are reflected by the position which the lachrymal occupies. In *H. liberiensis*, as shown by Leidy, who had at his disposal the skull of a younger animal, exhibiting distinctly all the sutures, the lachrymal is entirely separated from the nasals by the anterior prolongation of the frontal, which last thus comes in contact with the maxillary. This is, with the exception of the Ruminants, almost the rule in Ungulates. As to *H. sivalensis*, in six out of seven skulls figured in the 'Fauna Antiqua Sivalensis' the sutures are distinctly to be seen; and we find here again the lachrymal excluded by the frontal from contact with the nasal and joining the maxillary. The originals of most of the skulls figured being in the National Museum, I have had an opportunity of verifying the accurateness of the drawings, so that we may fairly conclude that *H. sivalensis* had, as a rule, the character mentioned above in common with *H. liberiensis*. The same is the case with regard to *H. palæindicus*, as shown in the F. A. S., with the slight difference that the anterior tongue of the frontal is somewhat shortened.

In the Malagasy *Hippopotami* we find, as a rule, the following relations in this part of the skull. The lachrymal departs from the orbital margin in an inward direction and reaches the nasal, with which it unites, thus shutting out the frontal from a connection with the maxillary. Anteriorly to the lachrymal, exactly corresponding to the place which in *H. liberiensis* and *H. sivalensis* is occupied by the foremost tongue of the frontal, we find here a separate bone of various dimensions, interposed between the nasal and lachrymal, and touching the maxillary in front and sometimes the malar bone as well. In *H. amphibius* the lachrymal is usually broadly interposed between the frontal and maxillary; but in young specimens we meet occasionally with the same supranumerary bone; sometimes, as in *H. liberiensis* and *H. sivalensis*,

the frontal joins the maxillary, thus separating the lachrymal and nasal; and, besides, there is such a variability in the size and mutual connections of the bones in this part of the skull in young specimens, and, to a certain extent, in adult ones as well (four nasals, obliteration of the lachrymo-frontal suture, &c.), that we cannot here enter into more particulars.

My purpose was to show that, in respect of the above characters also the Malagasy *Hippopotami* are intermediate between *H. sivalensis* and *H. amphibius*, and appear to be in close relationship with both. Occasionally young specimens are hexaprotodont, as the Siwalik forms.

I think that, from what I have stated, we are fairly entitled to surmise that the Hippopotami entered Africa at a time when they were still in possession of all the characters of the Siwalik species, and that they crossed over to Madagascar when they had reached a condition intermediate between *H. sivalensis* and *H. amphibius*. In this condition they persisted in Madagascar, whilst on the neighbouring continent they progressed (or retrogressed) farther in the same direction. It is a curious circumstance that the *Hippopotamus major* from the Upper Pliocene of Italy has gone beyond *H. amphibius* in the same specialization; this may have had something to do with its earlier extinction.

## Rodentia.

But little attention has hitherto been paid to the Rodent fauna of Madagascar. Although four or five more or less nominal genera had been founded, it has been surmised that the Malagasy Rodentia have immigrated in recent times and are not even specifically Madagascar genera. This supposition rests on the assumption that the Rodents are, as a rule, passively wandering (Wallace, Zittel), and was made in spite of Peters having long ago pointed out that *Nesomys*, the first known Malagasy Rodent, resembles the American *Hesperomyes* in the conformation of the enamel and in the proportions of its molars [1].

My collections contain some hundred specimens of Rodentia, belonging to five genera and eight species, five or six of the species and two genera being new, besides two new genera found in a fossil condition. This material I have begun to work out, and, although my investigations are far from being completed, I do not think that the following conclusions will hereafter have to be modified in their main points.

The great majority of Malagasy Rodents at present known, viz. the genera *Nesomys*, *Hallomys*, *Gymnuromys*, *Eliurus*, *Brachy-*

[1] "Eine neue Gattung der Murinen aus Madagascar, welche in dem Zahnbau sich am nächsten den *Hesperomys* der westlichen Hemisphäre anschliesst, und so ein neues Beispiel von der geographisch so merkwürdigen Verwandtschaft der Fauna von Madagascar mit der von Amerika liefert . . . . . Die Backzähne $\frac{3-3}{3-3}$, in ihrer Schmelz bildung und Proportion ähnlich denen von *Hesperomys*."
(Sitzungsber. Ges. naturf. Freunde Berlin, Oct. 18, 1870, pp. 54, 55.)

*uromys*, *Hypogeomys*—*Brachytarsomys* stands somewhat apart from the others and requires further investigation—belong to the so-called Cricetine group of Muriform ("Muridæ," auct.) Rodents, of which they are the lowest of existing forms, having affinities with some of the least specialized of the family Dipodidæ, as defined by Winge, viz. to *Sminthus* and *Zapus*.

The African and Asiatic *Rhizomyes*, usually considered as belonging to the Spalacidæ, but which the last-named author places amongst the lowest Muridæ, alongside with the tertiary *Cricetodon* and *Eomys*, are nearly related to the Malagasy group of Rodents by means of the Abyssinian *Tachyoryctes* (*Rhizomys*) and the Malagasy *Brachyuromys*, the former being but a very specialized fossorial form of the more generalized *Brachyuromys ramirohitra*. The molars are almost identical in both, only but slightly more hypselodont in *Tachyoryctes*. If we divest the *Tachyoryctes* skull of its fossorial characters and of the consequences of the more hypselodont molars, we obtain a *Brachyuromys* skull. Likewise the skulls of the young *Tachyoryctes* bear much greater resemblance to *Brachyuromys* than the adult. There is further a great correspondence in external characters if we disregard the smaller ears and eyes of *Tachyoryctes* and its fossorial claws.

As to the affinities of the Malagasy Rodents with the lower Dipodidæ, they are revealed by the skull as well as by the conformation of the molars. The infraorbital foramen is large throughout and especially in *Brachyuromys*, though on the whole showing the form characteristic for the Muridæ[1], the posterior part of the zygomatic arch is bent downwards, the malar bone strongly developed and approaching the lachrymal more than in any other Muridæ, the size and shape of the incisive foramina nearly approaching what obtains in the Dipodidæ, &c. With regard to the teeth, the group of Malagasy Rodents, together with the Abyssinian *Tachyoryctes*, differ in a very important condition from the more specialized Murinæ, and even from the Cricetine Rodents, in having their molars of almost equal size and form; the two anterior molars especially are very much like each other. This likewise is a character in which they approach the lower Rodents, especially the Dipodidæ; in the pattern of the molars there is equally a strong resemblance of them all with Dipodidæ (*Sminthus*, *Alactaga*, *Zapus*); in this respect the mosaic pavement-like triturating surface, both in the Malagasy *Gymnuromys* and the Nearctic *Zapus*, is especially noteworthy.

The relation of the Madagascar Rodents to *Cricetus*, which is considered to be the type of the group, is viewed by me as

[1] The miocene *Paciculus*, from the John-Day beds in N. America, is considered by Scott to stand in most respects in an intermediate position between *Protoptychus* (which Scott supposes to be the ancestral form of the Dipodidæ) and the Dipodidæ, although it has lost all the premolars, and the lower portion of the infraorbital foramen forms, as in the Muridæ, a distinct notch for the passage of the nerve. ("*Protoptychus hatcheri*, a new Rodent from the Uinta Eocene," Proc. Ac. Nat. Sc. Philadelphia, 1895, p. 269.)

follows:—*Cricetus* is a terminal form amongst its congeners, somewhat connected with the Malagasy Nesomyinæ by means of the miocene *Cricetodon*, from which it is probably directly derived.

I have lastly to consider the affinities of the Malagasy Rodentia with the American *Hesperomyes*, urged by Peters with regard to the molars of his genus *Nesomys*. The resemblance is certainly striking between the pattern of the *Nesomys*-molars and of some of the bunodont *Hesperomyes*, and this resemblance extends alike to the form of the skull in both groups (conformation of the boundaries of the infraorbital foramen, small size of the tympanics, &c.). There exists more agreement between these two groups than between them and *Cricetus* and its Old-World allies. On the other hand, the Malagasy Rodents present unmistakable family features of their own, which all point in one direction, stamping them as lower, more primitive Muridæ than the *Hesperomyes*. The two anterior, and in some cases all three, molars are more like each other in size and pattern, although in this respect the difference is much less striking between the American *Hesperomyes* and the Malagasy *Nesomyes* than between the first and the Murinæ. Similar remarks apply to the skull: the infraorbital foramen is larger in the Malagasy mice, the malar bone always stronger developed and extending farther forwards and upwards towards the lachrymal &c.

Zittel is of opinion that all the Myomorpha of South America are recent, having immigrated from the north towards the end of the Diluvium [1]. The reasons for supposing this are, that so far only hystricomorphous Rodents have been met with in the older formations, the (Patagonian and) Santa Cruz beds. Here it must be borne in mind that the presence of a premolar and the pattern of the molars approaching the Hystricomorpha are not sufficient criteria for assigning to these latter several small Rodents of the Santa Cruz beds, of which the only parts preserved are the teeth. On the contrary, if there exist forerunners of the Muridæ in the Santa Cruz beds, they are likely to have possessed premolars. If the *Rhizomyes* and the Malagasy *Brachyuromys* possessed premolars—and there is strong evidence that this was recently actually the case—we would be inclined, without knowing more of them than their molar series, to assign them to the Hystricomorpha.

As matters stand at present, it must be admitted that all appearances speak against the ancient domicile of the *Hesperomyes* in South America, whereas we have in the miocene of North America such forms as *Eumys* and others, which might be considered to be the ancestors of the *Hesperomyes*. Moreover, *Cricetodon* of the European Miocene is more closely related to the *Hesperomyes* than to *Cricetus*.

There is therefore at present not sufficient evidence of a *direct* relationship between the Malagasy Rodents and the western *Hesperomyes*, although it seems to me difficult to explain their affinities as a result of mere convergence.

[1] Handbuch der Palaeontologie, 1, iv. p. 556.

I should again like to record my renewed thanks to the President and Council and Committee of the Royal Society for their valuable assistance, which has enabled me to carry on this work, aided by the liberality, first of all, of the Hon. Walter Rothschild, as well as of Mr. F. Du Cane Godman, Sir Henry Peek, and Mr. Alhusen.

I desire as well to express my very grateful thanks to Sir William Flower, Director of the Natural History Museum, and all the other officers, first of all Dr. Henry Woodward, who have done so much to enable me to carry out the objects of the expedition.

In conclusion it is my duty to speak in the highest terms of the intelligence, pluck, and perseverance displayed by my young assistant, Mr. Alphonse Robert, who refused to leave me when his life was in danger from staying with me.

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December 15, 1896.

Lt.-Col. H. H. Godwin-Austen, F.R.S., Vice-President, in the Chair.

The Secretary read the following report on the additions to the Society's Menagerie during the month of November:—

The registered additions to the Society's Menagerie during the month of November were 52, of which 31 were by presentation, 13 by purchase, 2 by exchange, and 6 were received on deposit. The number of departures during the same period, by death and removals, was 126.

Amongst the additions was a fine young male of the Arabian Gazelle (*Gazella arabica*) from Aden, presented, Nov. 30th, by Mr. R. G. Buchanan.

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Mr. Sclater exhibited two bound volumes of original water-colour drawings by Wolf and Waterhouse Hawkins, belonging to the Knowsley Library, which had been kindly lent to him for examination by the Earl of Derby. These drawings were of very great interest to zoologists, as containing many of the originals from which the figures in the two volumes of the 'Gleanings from the Knowsley Menagerie' and Wolf's 'Zoological Sketches' had been taken.

The first and larger-sized volume (29 in. by 22 in.), lettered on the back 'Wolf's Original Drawings,' contained twenty-two water-colour drawings by Wolf, of which a manuscript list in the volume, written by Mr. T. J. Moore in 1871, gave the following particulars:—

1. Lemur. Madagascar.
2. Lemur. Madagascar.
3. Eland Antelope or Impoofo (female). *Oreas canna*. South Africa. (See 'Knowsley Menagerie,' pp. 27, 29, 30,

plates 26, 27; and Cornwallis Harris's 'Game and Wild Animals of Southern Africa,' p. 24.)

4. Nylghau (male, female, and young). *Portax tragocamelus.* India. ('Knowsley Menagerie,' pp. 28, 29, pl. 29, young.)
5. Bonte-bok (male, female, and young). *Damalis pygarga.* South Africa. ('Knowsley Menagerie,' p. 21, pl. 22. figs. 2, 3, and pl. 20. fig. 3, young; and Harris's 'Game and Wild Animals of South Africa,' p. 88.)
6. Bless-bok. *Damalis albifrons.* South Africa. ('Knowsley Menagerie,' p. 22, pl. 22. fig. 1; and Harris, p. 110.)
7. Wapiti Deer (stag, hind, and fawn). *Cervus canadensis.* North America. ('Knowsley Menagerie,' p. 58, pl. 36.)
8. Gerbille. *Gerbillus.* North Africa.
9. Chinchilla. *Chinchilla lanigera.* Chili and Peru.
10. Long-winged Caracа Eagle. *Milvago megalopterus.* Bolivia and Peru.
11. Hornbill. *Buceros* (*nasutus*?). W. Africa.
12. "Brush-Turkey" or Talegalla. *Talegalla lathami.* Australia.
13. Impeyan Pheasant (male and female). *Lophophorus impeyanus.* Himalayas.
14. Fire-back Pheasant (male). *Gallophasis vieilloti.*
15. Japan Pheasant. *Phasianus versicolor.* Japan.
16. The same, crossed with the Common Pheasant, *Phasianus colchicus.*
17. Californian Quail (male). *Callipepla californica.* California.
18. Goliath Heron. *Ardea goliath.* West Africa.
19. "Mountain Goose." "*Tadorna cana.*" South Africa?
20. Black-backed Goose (male and female). *Sarkidiornis africana.* West Africa.
21. Dusky Duck. *Anas obscura.* North America.
22. Yellow-billed Duck or "Gnil-bec." *Anas xanthorhyncha.* South Africa.

Specimens of all the above, except no. 10, and perhaps nos. 1, 2, were living at Knowsley at the breaking up of the Collection in 1851, and these sketches were doubtless made *from those* specimens, either before or after their removal.—T. J. Moore, April 28, 1871.

The second volume, which was lettered on the back 'Knowsley Menagerie. Original Drawings by W. Hawkins and Wolf' (size 25 in. by 20 in.), contained sixty-nine original drawings by those artists. There was no manuscript list attached to this volume, but Mr. Sclater had prepared the subjoined account of its contents.

[In the following list the writing on each plate in ink and pencil is first given. The paragraphs added, enclosed in brackets, are Mr. Sclater's remarks.]

1. "*Anoa depressicornis.* Drawn from the living animal at Knowsley, Jan. 12, 1846, by Waterhouse Hawkins. Obtained

from the Jardin des Plantes à Paris in exchange, but lived a very short time."

[This is *Anoa depressicornis*, apparently adult male.]

2. "Figured from the living animals at Knowsley, Oct. 1847, by B. Waterhouse Hawkins. ♂ and ♀."

[This is the Boutebok, *Damaliscus pygargus*, ♂ ♀. These are the originals of the two right-hand figures in the 'Gleanings,' plate xxii.]

3. "*Gazella albifrons* or female Blesbok. Figured from the living animal at Knowsley, Sept. 25, 1847, by B. W. Hawkins."

[This is the original of the left-hand figure in the 'Gleanings,' plate xxii.]

4. "*A. corrigum*, ♀ and young (taken by Mr. Whitfield himself from the adjoining mother's womb), and *A. bubalis*, adult male."

[The left-hand figure is the Korrigum, *Damaliscus korrigum*; the right-hand is either *Bubalis buselaphus* or possibly *B. major*, as it shows blackish feet and whitish marks round the eyes.]

5. "Young and adult female Dacris, so called by Whitfield, but the last doubtful, supposed to be *Ant. equina*."

"I have compared this with the Cape specimen of *A. equina*, measured the ears, and can see no difference. I think it would be well to engrave this for the 'Gleanings.'—*J. E. Gray*."

[These are the young and adult female of the Equine Antelope, *Hippotragus equinus*, or of its representative species in West Africa.]

6. "Drawn from sketches made from the living animal on board the 'African,' Sept. 11th, 1848, by B. Waterhouse Hawkins."

[Two figures, side and front views of the head, apparently of the same young male *Hippotragus* that was figured in the last plate.]

7. "Young female Dacris. From sketches made from the living animal, Sept. 11th and 12th, 1848, by B. Waterhouse Hawkins."

[Two whole figures, apparently of the same animal as that represented in the last plate.]

8. "B. Waterhouse Hawkins at Knowsley, July 8th, 1843. Whitfield says the hair on the hip is slightly curled."

[Male, female, and young Kob, *Cobus kob*.]

9. "*A. bubalis*, jun."

[Apparently *Bubalis buselaphus*, jr.]

10. "Drawn from the living animals at Knowsley by B. Waterhouse Hawkins, Dec. 30, 1843."

[Male and female Eland, *Oreas canna*, apparently originals of plate xxvi. of the 'Gleanings.']

11. "Drawn from the living animals at Knowsley, April 3rd, 1845, by B. Waterhouse Hawkins."

[Three figures, apparently female, young, and half-grown male of Eland, *Oreas canna*, original of plate xxvii. of 'Gleanings.']

12. "Harnessed Antelope, *Antilope scripta*. Knowsley, June 30th, 1843. B. Waterhouse Hawkins."

[Harnessed Antelope, *Tragelaphus scriptus*, ♂ ♀. Original of plate xxviii. of 'Gleanings.']

13. "Coquitoun. Village of Waterloo, Sierra Leone. H. Whitfield.

"*Cephalophus*, female. ?if of the Grimm."

[Apparently *Cephalophus rufilatus*, see 'Book of Antelopes,' vol. i. p. 169.]

14. "From the living animals at Knowsley, March 20th, 1845, by B. Waterhouse Hawkins."

[Male, female, and young of Addax Antelope, *Addax nasomaculatus*. Plate xviii. of the 'Gleanings' is partly taken from this plate.]

15. "Drawn from the living animal at Knowsley, April 3rd, 1846, by B. Waterhouse Hawkins."

[*Addax nasomaculatus*, a side-figure.]

16. "Gazelle, what species? *We* have called it here *G. vera* or True Gazelle."

[Three figures apparently of the Arabian Gazelle, *Gazella arabica*, the originals of 'Gleanings,' plate iii.]

17. "Male Gibari or Mahomet's Antilope. Drawn from the living animal at Knowsley, Nov. 14th, 1845, by B. Waterhouse Hawkins. Thought very good."

[Male Gambian Oribi, *Ourebia nigricaudata* (see Bk. of Ant. vol. ii. p. 23, pl. xxvi.); probably original of plate v. of the 'Gleanings,' but the figure there given is reversed.]

18. "Figured from the living animal at Knowsley by B. W. Hawkins, Nov. 5, 1847.

"Hair pale yellowish, tip black."

[Probably male Crowned Duiker, *Cephalophus coronatus*. See Bk. of Ant. vol. i. p. 195, pl. xxii. fig. 2.]

19. "Figured from the living animals at Knowsley, Nov. 5th, 1847, by B. W. Hawkins.

"Hair root-grey, middle black, tip chestnut."

[Male and female Duiker, *Cephalophus* sp. inc.]

20. "From the living animals at Knowsley, March 14th, 1844, by B. Waterhouse Hawkins.

"Persian Deer received from Zoological Society in 1844. Taken in their winter dress. The stag still living, 1846, but hind died soon."

[Persian Deer, *Cervus maral*, ♂ and ♀.]

21. "Drawn from the living animal at Knowsley, Sept. 13th, 1844, by B. Waterhouse Hawkins.

"Persian Deer in his summer coat."

[*Cervus maral*, male; apparently original of plate xxxix. of the 'Gleanings.']

22. "*Cervus*, Himalayan Deer, received from Mr. McClelland, of Calcutta; reached us stone-blind, and still continues. Waterhouse Hawkins, drawn from the living animal at Knowsley, Sept. 6, 1847."

[*Cervus duvauccli*, male; apparently original of plate xl. of the 'Gleanings.']

23. "Wapiti Deer, stag and two hinds, in the distance a younger stag and pair of calves of last year. Drawn from the living animals at Knowsley by B. Waterhouse Hawkins, Jan. 26, 1844. Very good."

[Male, female, and young Wapiti Deer, *Cervus canadensis*; apparently original of plate xxxvi. of 'Gleanings.']

24. "Drawn from the living animal at Knowsley, Dec. 20, 1844, by B. Waterhouse Hawkins.

"Received from the Himalayas, 1842, but species not known."

[Apparently young male of *Cervus duvauceli*, and original of plate xli. of 'Gleanings.']

25. "Figured from the living animals at Knowsley, Sept. 20th, 1847, by B. Waterhouse Hawkins.

"Received from Mr. Westerman."

[Three figures, male and two females, of a *Cervus*, apparently the Javan Deer, *Cervus rusa*. Originals of plate xliii. of 'Gleanings.']

26. "Barbary Deer, stag, hind, and female calf of same year. Drawn from the living animals at Knowsley, Feb. 6th, 1844, by B. Waterhouse Hawkins. Very good."

[*Cervus barbarus*, male, female, and young. Original of plate xxxvii. of the 'Gleanings.']

27. "The female *C. equinus* and the male a Rusa, obtained from Amsterdam in 1845, but lived only a few months.

"Drawn from the living animals at Knowsley by B. Waterhouse Hawkins, Nov. 25, 1845."

[The male and female of two species of Rusine Deer, *Cervus* sp. inc.]

28. "Drawn from the living animals at Knowsley by Waterhouse Hawkins, Jan. 1844."

[Three figures, male and female in two positions, of the Virginian Deer, *Cariacus virginianus*, or of a nearly allied species. Original of plate xlvi. of the 'Gleanings.']

29. "Drawn from the living animals at Knowsley, July 1845, by B. Waterhouse Hawkins.

"See same animals figured March 22nd, 1844."

[Two figures, male and female, of an American Deer, probably *Cariacus leucurus* in summer dress. Original of plate xliv. of the 'Gleanings.']

30. "From the living animals at Knowsley, *winter colour*, March 22nd 1844, by B. Waterhouse Hawkins.

"? What species, refer Introduction Book; was it first considered by us the Black-tailed kind.

"See same animals figured July 1845."

[Two of same animals as figured in plate 29, probably *Cariacus leucurus* in winter dress. Original of plate xlv. of 'Gleanings.']

31. "Drawn from the dried skin of a very young specimen of *one* of the Brockets, but proposed to be set aside."

[Female of a Brocket, *Cariacus* sp. inc.]

32. "*Coassus rufus*, F. Cuv., male. Original of plate xlviii. in the 'Gleanings.' From Brazil.

"Drawn from the living animal at Knowsley, March 21st, 1846, by B. Waterhouse Hawkins."

[Red Brocket, *Cariacus rufus*, male, apparently original of right-hand figure of plate xlviii. of 'Gleanings.']

33. "Peta? Brockets. Drawn from the living animals at Knowsley, Feb. 6th, 1845, by B. Waterhouse Hawkins."

[Apparently mother and two young of a South-American Brocket, *Cariacus* (subgen. *Coassus*) sp. inc.]

34. "No. 1, *Coassus superciliaris*, female. Original of a plate of the 'Gleanings.' Habitat, South America. No. 2, male; 3, female, *Coassus rufus*, F. Cuv., pl. xlvii. of 'Gleanings.'

"Drawn from the living animals at Knowsley by B. Waterhouse Hawkins, Sept. 16th, 1847."

[Three figures, right and left male and female probably of *Cariacus rufus*, originals of plate xlvii. of 'Gleanings.' The centre figure, female Brocket, *Cariacus* sp. inc., seems to be the original of the right-hand figure of a plate in the 'Gleanings' called Eye-browed Brocket, *Coassus superciliaris*, without any number.]

35. "Water Musk from W. Africa. B. Waterhouse Hawkins, drawn from a dried skin at Knowsley, Nov. 9th, 1843."

[Male, female, and young of African Water Chevrotain, *Hyomoschus aquaticus*. Original of plate xxxi. of 'Gleanings.']

36. "Drawn from the living animals at Knowsley, August 1845, by B. Waterhouse Hawkins."

[Male, female, and young of Javan Chevrotain, *Tragulus javanicus*. Original of plate xxxv. of 'Gleanings.']

37. "Drawn from the living animal at Knowsley, Dec. 31st, 1844, by B. Waterhouse Hawkins. Nat. size ♀."

[Female of Stanley Chevrotain, *Tragulus stanleyanus*. Original of plate xxxiii. of 'Gleanings.']

38. "Alpaca. Drawn from the living animals at Knowsley, July 23rd, 1844, by B. Waterhouse Hawkins."

[Group of Alpacas, *Auchenia pacos*, six figures. Original of plate lii. of 'Gleanings.']

39. "Llama. Drawn from the living animals at Knowsley, July 9th, 1844, by B. Waterhouse Hawkins."

[Group of Llamas, *Auchenia glama*, five figures. Original of plate li. of 'Gleanings.']

40. "Vicuna. From the living animal at Knowsley, October 26, 1844, by B. Waterhouse Hawkins."

[Male and female Vicuna, *Auchenia vicugna*. See plate xlix. of 'Gleanings.']

41. "Drawn from the living animals at Knowsley, September 1845, by B. Waterhouse Hawkins."

[A pair of Onagers, *Equus onager*, apparently of the Indian form. See pl. liii. of 'Gleanings.']

42. "Drawn from the living animals at Knowsley, June 13, 1844, by B. Waterhouse Hawkins. The foal born at Knowsley, May 23, 1844.

"Male and foal still living, 1846."

[Male, female, and foal of the Mountain Zebra, *Equus montanus*. Original of plate lvi. of 'Gleanings.']

43. "Colobus. From a dried skin marked Whitfield 8.1.43 by B. Waterhouse Hawkins at Knowsley Hall, Nov. 22nd, 1843."

[Apparently *Colobus polycomus*.]

44. "Drawn from the living animals at Knowsley, October 1845, by B. Waterhouse Hawkins."

[A pair of Cheetahs, *Cynælurus jubatus*.]

45. "Drawn from the living animals at Knowsley, October 4th, 1845, by B. Waterhouse Hawkins."

[A pair of young Servals or of an allied species, possibly *Felis servalina*.]

46. "B. Waterhouse Hawkins, 1847."

[A Long-eared Fox, *Otocyon megalotis*.]

47. "B. W. H., Oct. 20, 1843. The specimen in Museum marked Bates, Belize river."

[Derbian Opossum, *Didelphys lanigera*. This is no doubt taken from the type of *D. derbiana*, Waterhouse, which was described from Lord Derby's specimen: see Waterhouse, Nat. Hist. Mammals, i. p. 495.]

48. "Adult female (now lost), young still living. From the living animal at Knowsley, April 22nd, 1845, by B. Waterhouse Hawkins."

[Two figures, mother and young, of the Philander Opossum, *Didelphys philander*.]

49. "Drawn from the living animals at Knowsley, Jan. 16th, 1845, by B. Waterhouse Hawkins."

[Three figures of the Patagonian Cavy, *Dolichotis patagonica*.]

50. "Drawn from the living animal at Knowsley by B. Waterhouse Hawkins, June 13th, 1845."

[A Cavy, probably the Rock Cavy, *Cavia rupestris*.]

51. "In Museum at Knowsley, figured by B. Waterhouse Hawkins, Oct. 10th, 1843. Specimen in Museum marked

J. Bates, Guitanala, Sept. 1843. Compare it with *S. griseo-caudatus* figured Mamm. Voyage 'Sulphur.'"

[Squirrel, one of the forms of *Sciurus hypopyrrhus*. See 'Biologia Centrali-Americana,' p. 128.]

52. "B. W. Hawkins. Specimen in Museum marked Whitfield, Sept."

[Le Conte's Squirrel, *Sciurus lemniscatus*: see Jentink, 'Notes from Leyden Museum,' iv. p. 36.]

53. "*Ctenodactylus massonii*, Gray, or Gundi of Tunis. H. C. Richter, del."

[Two figures of the Gundi Rat of Algeria, *Ctenodactylus gundi* (Gmelin).]

54. "J. Wolf, Oct. 28th, 1850."

[Group of Sambur Deer, probably *Cervus hippelaphus*.]

55. "J. Wolf, Oct. 7th, 1850."

[Group, apparently of Barasingha Deer, *Cervus duvauceli*, in summer pelage.]

56. "J. Wolf. Oct. 24th, 1850."

[Pair of albino Sambur Deer, *Cervus hippelaphus*?, in park at Knowsley.]

57. "J. Wolf, Oct. 19th, 1850."

[Male and female, with distant figures in the background of one of the South-American Deer, *Cariacus* sp. inc. On the back is written, in pencil, "Savanna Deer of Demerara and Guiana."]

58. "J. Wolf, Nov. 9th, 1850."

[Group of one of the Rusine Deer, perhaps *Cervus equinus*.]

59. "J. Wolf, Oct. 17th, 1850."

[Group of American Deer, probably *Cariacus virginianus* or *C. leucurus*, on snow.]

60. *Cephalophus rufilatus*, Gray, W. Africa. J. Wolf, August 16th, 1850.

[Group of the Red-flanked Duiker, *Cephalophus rufilatus*. See Bk. of Ant. vol. i. p. 167, pl. xix. fig. 1.]

61. "J. Wolf, August 1850. *Antilope quadricornis*."

[Group of Four-horned Antelopes, *Tetraceros quadricornis*. See Bk. of Ant. vol. i. p. 215, pl. xxiv.]

62. "J. Wolf, Oct. 14th, 1850."

[Adult and young males of Moose or Elk, *Alces machlis*, in deep snow.]

63. "J. Wolf."

[Hybrid Bull, see P. Z. S. 1849, p. 172; where the figure is copied and the animal is described by D. W. Mitchell.]

64. "J. Wolf, September 5th, 1850. Yak, female. *Bos grunniens*, from East India."

[Group of Yaks, *Poephagus grunniens*.]

65. "J. Wolf, Sept. 2nd, 1850. ½-bred between Brahmin Bull and cow, at Fain."
[Hybrid cattle.]

66. "J. Wolf, Oct. 11th, 1850.
Squirrel sent from Valparaiso."
[Squirrel, *Sciurus*, one of the forms of *S. hypopyrrhus*, probably *S. h. dorsalis*.]

67. "J. Wolf, Oct. 4th, 1850.
"*Ryzæna capensis*."
[Two figures of the Suricate, *Suricata tetradactyla*.]

68. "J. Wolf, Aug. 8th, 1850."
[Group of Guans, probably *Penelope superciliaris*.]

69. "J. Wolf, 1850."
[A cock and two hens of Prince Albert's Curassow, *Crax alberti*.]

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Mr. W. Bateson exhibited three common blue Antwerp Pigeons, lent by Mr. F. Doggett, of Cambridge, showing webbing between the toes. The amount of webbing differed in each case. All the birds were the offspring of a single pair which were absolutely normal. The following remarks gave the details of each case:—

I.—*Right foot.* Digits 2 and 3 united by a web extending nearly to end of 2nd phalanx of each toe. In digits 3 and 4 the web does not extend quite so far.

*Left foot.* Like right foot, but the edge of the web between digits 2 and 3, when the foot is extended, stretches more nearly in a straight line from digit to digit, instead of being curved to form a bay.

II.—*Right foot.* Digits 3 and 4 webbed like 2 and 3 in right foot of foregoing. Digits 2 and 3 not webbed at all.

*Left foot.* Like the right, but the web between digits 3 and 4 extends rather beyond 2nd phalanx and is continued up the side of the toes on to the terminal phalanx as a narrow flap of skin.

III.—Both feet have the three digits completely webbed together to the bases of the claws. Right foot has digits 3 and 4 united by a loose web, but digits 2 and 3 are closely webbed together, so that they can scarcely be moved independently. In the left foot all three digits are thus closely united and the foot has a somewhat deformed appearance. The bird can, however, sit on a perch without difficulty.

The hallux is normal in every case.

The web is pink, healthy-looking skin, with scaling on the dorsal surface near the digits.

The birds I. and III. belong to one nest, but II. belongs to a later nest. Mr. Doggett states that he had seen one or both birds with more or less webbing in four different pairs of young reared by the same parents. Figures showing the right foot of III. and the left

foot of II. appear, together with a descriptive note by Mr. Tegetmeier, in the 'Field,' 1896, vol. 88, p. 464.

Attention was called to the fact that it is *not* the same pair of digits which are the most webbed in all cases; for in both feet of II. the web was developed chiefly between digits 3 and 4, while in I. the greatest development was between digits 2 and 3.

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Prof. Newton, F.R.S., sent for exhibition a mounted specimen of a rare bird from the Sandwich Islands, accompanied by the following remarks:—

I submit for exhibition the type specimen of *Heterorhynchus olivaceus*, Lafresnaye (Magasin de Zoologie, 1839, pl. x.; Revue Zoologique, 1840, p. 321), which has been entrusted to my care by the courtesy of the authorities of the Natural History Society of Boston, and the kindness of the Curator of its Museum, Professor Alpheus Hyatt.

Soon after the return, in the winter of 1888–9, of Mr. Scott B. Wilson from his first visit to the Sandwich Islands, he brought the collection of bird-skins he had there made to Cambridge that it might be worked out. I gladly gave him all the help I could, and my applications to that end for the loan of specimens were generously granted by the custodians of several museums. One of the specimens I was most anxious for Mr. Wilson to see was the type of Lafresnaye's species above mentioned. This was included in the lithographed catalogue of that ornithologist's collection (No. 5677 *bis*) and was presumably in the Museum at Boston; but all Prof. Hyatt's efforts to find it were vain. Consequently Mr. Wilson had to do the best he could without examining it, and, as may be seen in his paper "On three undescribed Species of the Genus *Hemignathus*" (Annals and Magazine of Natural History, ser. 6, iv. pp. 400–402), he followed the example already set him by Cassin (United States Exploring Expedition, Mamm. & Orn. pp. 179, 180), by Mr. Sclater (Ibis, 1879, p. 92), and by Dr. Sharpe (Cat. B. Brit. Mus. x. p. 4) in keeping Lafresnaye's bird distinct from the *Hemignathus lucidus* of Lichtenstein (Abhandl. k. Akad. Berlin, 1838, p. 451, tab. 5. figs. 2, 3).

Towards the end of last summer I received a letter from Prof. Hyatt, referring to our former correspondence and telling me that, "In looking over the collection this year, one of my assistants found the *Heterorhynchus olivaceus*, 5677 *bis*, Lafresnaye Catalogue. Remembering the fact that you had applied for it, and looking up the matter and consulting your communication, I thought it best to inform you that this specimen had reappeared. It was misplaced, and consequently could not be found at the time it was needed."

At my request Prof. Hyatt obtained leave to send this specimen to me, and before returning it to Boston it seems desirable to exhibit it at a meeting of the Zoological Society, as I believe that no adult male example of this extinct species has been before seen